

THEREATED CAP PROVIDED WITH TAMPER-EVIDENT BAND

The invention relates to a combination of a container having a neck, which surrounds an opening in the container, and a plastic collar, which can be screwed onto the neck, in accordance with the preamble of claim 1. The invention also relates to a plastic  
5 collar which is intended for a combination of this type and to an object in which a collar of this type is integrated.

The collar may, for example, form (an integral) part of a closure member for the container.

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In a preferred application of the invention, the collar is an integral part of a screw cap, for example having a closure wall running transversely with respect to the circumferential wall of the collar.

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The collar could also be designed as a securing collar for fixing an object, for example a pump enabling the contents of the container to be dispensed via the pump, in the neck of the container.

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All kinds of different embodiments of a combination according to the preamble of claim 1 and a collar which is intended for this combination are known.

25 US 5,819,965 has disclosed a screw cap with tamper-evident ring, in which breakable bodies are present between that part of the collar of the screw cap which is provided with the screw thread and the tamper-evident ring. When the cap is unscrewed for the first time, the breakable bodies break and the tamper-evident  
30 ring remains behind on the neck of the container.

One drawback of this known screw cap is that the tamper-evident ring remains behind on the container. Particularly if the container is intended for a beverage which is suitable for human

consumption and it is intended or can be expected that the consumer will put the container to his mouth in order to drink the beverage, there is a risk of the tamper-evident ring becoming detached and entering the mouth.

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DE 87 16625 has disclosed a screw cap with a tamper-evident ring to which flexible blocking members are secured, the document disclosing ring segments and breakable bridges between the ring segments.

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A significant drawback of this known screw cap is that it is difficult to produce it by injection-moulding, since the flexible blocking members are oriented in such a manner with respect to the cap that they point towards the cap. If this device is made in a mould using the injection-moulding method, the cap will be very difficult to remove from the mould after the injection-moulding has taken place. It is impeded by the flexible blocking members. The cap or the mould will have to be deformed in order for the cap to be removed from the mould.

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It is an object of the present invention to provide an improved plastic collar which avoids the abovementioned drawback.

Another object is to provide a plastic collar which allows simple production.

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The present invention provides a combination according to the preamble of claim 1, which is characterized in that each connecting body extends radially inwards from the top side of the ring segment, and each ring segment has an associated single connecting body which extends over a smaller circumferential angle than the associated ring segment, so that there is an opening between circumferentially successive connecting bodies, and the blocking member which is associated with a ring segment being arranged offset, as seen in the circumferential direction, with respect to the connecting body.

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The present invention also provides a plastic collar according to claim 5.

The plastic collar according to the invention which can be screwed onto the neck of a container, and advantageous embodiments thereof, will be explained in more detail below with reference to the drawing, in which:

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Fig. 1 shows a perspective view of an exemplary embodiment of a screw cap according to the invention and a spout which can be sealed in a film/foil pouch and has a neck onto which the cap can be screwed,

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Fig. 2 shows a side view of the screw cap and spout shown in Figure 1, with the cap having been screwed onto the neck of the spout,

15 Fig. 3 shows a plan view, on a larger scale, of the screw cap and spout from Figures 1 and 2, and

Fig. 4 shows a vertical section, on a larger scale, through the screw cap and spout shown in Figures 1 and 2, on line IV-  
20 IV in Figure 3.

The figures show a combination of a spout 1 and a screw cap 20.

The spout 1 is made from plastic and is intended to be sealed in  
25 a film/foil pouch, so that the spout 1 forms part of a container, for example for a beverage which is suitable for human consumption.

The spout 1 has a body with a substantially cylindrical neck 2,  
30 which surrounds an opening 3, in the present example of a passage for supplying a medium to the container and/or discharging a medium from the container.

The bottom part 5 of the spout 1 is designed to be sealed  
35 between two opposite walls of the film/foil pouch.

The neck 2 is provided, in its top part, with a first screw thread 6. Furthermore, beneath the first screw thread 6 the neck 2 is provided with a blocking rib 7 which projects radially

outwards.

In this example, the spout body 1 is provided with a number of further circumferential ribs 8 which are used to enable the  
5 spout body to be handled.

The screw cap 20 is likewise produced by injection-moulding in a suitable injection mould.

10 The screw cap 20 has a collar 21, which can be screwed onto the neck 2 and has a transverse wall 22, which extends transversely over the top side of the collar 21, and has an underside 23 and an outer circumference, which in this case is provided with ribs for improving grip on the screw cap 20.

15 The collar 21 is provided, on the inner side, with a second screw thread 24, which is complementary to the first screw thread 6 in order for the cap 20 to be screwed onto the neck 2.

20 On the underside, the screw cap 20 is provided with a tamper-evident ring 25, which will be explained in more detail below with reference to Figures 1-4.

The tamper-evident ring 25 has a plurality of ring segments 26,  
25 in the present example three, which lie adjacent to one another as seen in the circumferential direction of the ring 25.

Each ring segment 26 is provided, on the inner side, with an inwardly projecting flexible blocking member 27. In this  
30 example, each blocking member 27 is designed as a flexible lip which projects obliquely upwards from the inner side of the ring segment 26 and is integral with the ring segment 26 only at its bottom end.

35 On its top side, each ring segment 26 is integrally connected to the collar 21 via a single, unbreakable and flexible connecting body 28.

In this case, the connecting body 28 extends radially inwards

from the top edge of the ring segment 26 and adjoins the bottom edge 23 of the circumferential wall 21 of the screw cap 20.

5 The connecting body 28 extends over a smaller circumferential angle than the associated ring segment 26, so that there is an opening 29 between circumferentially successive connecting bodies 28. Moreover, the blocking member 27 associated with a ring segment 26 is arranged offset, as seen in the circumferential direction, with respect to the connecting  
10 body 28.

In particular, in the embodiment shown the connecting body 28 is located in the vicinity of the front end, as seen in the unscrewing direction, of a ring segment 26 and the blocking  
15 member 28 behind it, in this example close to the rear end of the associated ring segment 26. This arrangement of these components with respect to one another is advantageous with a view to unscrewing the cap 20, but other arrangements are also conceivable within the context of the invention.

20 A significant advantage of the measures described above is that it is possible to make do with a relatively simple injection mould for production of the screw cap 20.

25 Each ring segment 26 is connected to the adjacent ring segments 26 via thin, breakable bridges 30. These bridges 30 are in this case located close to the bottom edge of the ring segments 26.

The design of the cap 20, and in particular of the tamper-evident ring 25 thereof, means that when the cap 20 is being  
30 screwed onto the neck 2, the flexible lips 27 pass over the blocking rib 7 without the breakable bridges 30 being damaged. In this way, the lips 27 then engage behind the underside of the blocking rib 7.

35 When the cap 20 is being unscrewed for the first time, the lips 27 come into contact with the underside of the blocking rib 7. When the cap 20 is unscrewed further, the forces generated in the tamper-evident ring 25 are such that one or more breakable

bridges 30 of the tamper-evident ring 25 break. As a result, the ring segments 26 with the lips 27 can move outwards and the lips 27 can move past the blocking rib 7.

- 5 It is important that the ring segments 26 remain integral with the screw cap 20 and therefore do not remain behind on the neck 2. The fact that the bridges 30 have broken is clearly visible, so the consumer can see whether the cap has previously been opened.

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It will be clear that the neck may also form an integral part of a container, for example a (plastic) bottle.